Think of Exercise as a Pill That Promotes Long Life and a Whole Lot More

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Part 1: Exercise to Live Longer

I'd like to make a point that may impress you. Think for a minute about the multitude of chronic diseases and the wonderful drugs that have been developed for them. When a drug company discovers a new drug that promises to cut flare-ups of a chronic disease by 30 percent, this is considered a drug worth pursuing, worth investing hundreds upon hundreds of millions of dollars to bring to market. Drugs don't have to stamp out symptoms in 100 percent of sufferers to generate big profits. A 30 percent drop in the likelihood of suffering worsening disease draws rapt attention in the drug world.

Well, the risk of dying from any cause ("all-cause mortality") among people who exercise regularly is also cut by 30 percent, actually more like 20-40 percent in most studies and by 50 percent in a few. [1] In other words, free and simple exercise is just as potent and sometimes more potent than are many of these expensive medications.

Please understand that control of chronic diseases and prevention of death are two different things, so I'm not advocating you substitute exercise for any medications you may need. What I am saying is that if drug companies could bottle regular exercise, they'd be all over it. Their television ads would run incessantly and they'd charge big bucks for it!

The studies that have demonstrated the potency of exercise are observational studies where researchers take groups of people (some who exercise a lot, some who exercise a little, some who exercise not at all) and follow them over time. These studies go on for anywhere from 5 to 25 years and during that time, the researchers observe to see how many study subjects die, how many have strokes or heart attacks, how many get diabetes, how many get cancer, etc.

Observational studies are not as definitive as randomized, controlled trials. Observational studies cannot prove that one thing causes another. Well-done randomized, controlled trials have the power to prove causation but observational studies do not; they can only observe that people who

[1] Kodama S, Saito K, Tanaka S, et al. Cardiorespiratory Fitness as a Quantitative Predictor of All-Cause Mortality and Cardiovascular Events in Healthy Men and Women. *JAMA (Journal of the American Medical Association)* 2009; 301:2024.

exercise regularly live longer. However, the observational data for exercise is so consistent over so many studies that it's highly likely exercise plays a major role in preventing death.

Part 2: Preventing Death Is Nice, But What Else Can Exercise Do?

Regular exercise prevents death but also does a whole lot more. It imparts physical strength and stamina. It boosts energy levels and combats fatigue. Regular exercise has been shown to significantly reduce the risk of developing heart disease, chronic lung disease, high blood pressure, and type II diabetes. People with high blood pressure can safely exercise, provided their hypertension is controlled reasonably well, and regular exercise tends to lower blood pressure over time. Exercise can also prevent and treat obesity when combined with a weight loss diet; and exercise reduces the risk of osteoporosis when it's walking or jogging or a similar activity that gently jars the bones.

One of the great benefits of exercise is relief of stress and anxiety. Sleep improves. People suffering depression are helped; and some preliminary evidence suggests the risk of dementia and cognitive decline in older persons may lessen.

Many kinds of exercise promote balance and flexibility. Yoga and tai chi (also called tai chi chuan) are two examples. Combine balance work of this type with exercises that strengthen large muscles (your legs, hips, torso [chest, abdomen and back], shoulders, and arms) and the risk of falling and injuring yourself will drop significantly. Randomized studies have shown that tai chi reduces the risk of falling in older people. Researchers have studied tai chi because it needn't be strenuous, older people can perform it, and it utilizes sound principles of movement and posture.

One such randomized study from Connecticut demonstrated that tai chi did indeed help study subjects 75 years and older maintain balance skills, but the results suggested further that tai chi combined with resistance exercises might do even better. [2] The likely reason for the added benefit of resistance exercises is that, inevitably, sooner or later, people lose muscle mass as they age. Skinny legs and hips and weak backs and abdomens lead to more falls. Resistance training, where you exert your muscles against weights, springs, or elastic bands, increases both muscle strength and mass and slows down this loss. Pilates and weight-lifting are two good examples of resistance exercise and, quite honestly, it's inspiring to see an 80 or 90-year-old suited up and working at a weight machine. Doing resistance exercises correctly and safely can be achieved with a few lessons from a fitness instructor.

Regular exercise has been shown to increase success rates for people who are trying to quit smoking. Exercise can help people who suffer from conditions of chronic pain, as in osteoarthritis. Regular exercise modestly reduces the risk of certain cancers like breast and colon, and perhaps other cancers. Furthermore, survival in persons who have these cancers is also improved by regular exercise. [3]

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[2] Wolfson L, Whipple R, Derby C, et al. Balance and Strength Training in Older Adults: Intervention Gains and Tai Chi Maintenance. *J Am Geriatr Soc (Journal of the American Geriatrics Society)* 1996; 44:498.
[3] Peterson D. Overview of the Risks and Benefits of Exercise. *UpToDate,* Wolters Kluwer Health. August 20, 2014.

Exercise can be a stimulating social experience. Walking groups, fitness clubs, aerobics classes, ballroom dancing, and group classes for seniors can be social, informative, and motivating. And, regular physical activity has been shown to improve the ease with which 70 to 78-year-olds perform activities of daily living (ADLs) and to increase the percentage of 78 to 85-year-olds who are still able to perform their ADLs independently. [4]

Chances are you've heard of other benefits from exercise, but here's one you may not have heard: Gallstones are less likely to cause trouble in people who exercise and happen to have gallstones in their gallbladders.

Part 3: It's Never Too Late to Start Exercising

The Centers for Disease Control and Prevention (CDC) in Atlanta, along with other research institutions including the University of Minnesota, studied exercise in a large group of older women in the 1990s, asking them how far and how vigorously they walked each day and how often they danced or gardened, did aerobics or swam. [5] These women, on average, were 77 years of age at the beginning of the study. The researchers found that those women who were sedentary at the start of the study but began exercising regularly during the 10-year observation period reduced their risk of death from all causes by 48 percent. In their data analysis, the researchers classified these women into groups according to overall health, ranging from good health to poor health, and found that basically this 48 percent reduction in mortality rate held true for every one of these health groups. This piece of evidence and many others like it have demonstrated that regular exercise not only prevents chronic diseases like heart disease and diabetes, it also benefits people who already have these diseases, even people in poor health.

These same researchers went on to find that recent physical activity was a more important predictor of longevity than past physical activity. Sedentary women who became active over the course of the study had mortality rates similar to those who had exercised all along, and women who stopped exercising during the study had mortality rates similar to women who had been sedentary all along. This means that, in this trial, ongoing exercise was important for longevity.

Many studies published over the last 10 years have shown the benefits of exercise for both men and women in their 70s and 80s. An observational study from Pennsylvania and Tennessee in 2006 recruited men and women ages 70-79 and looked at all kinds of physical activity, not just dedicated exercise activity. [6] This study found that any physical activity, if sustained for some minutes and repeated over some period of time, was associated with lower mortality rates. It didn't need to be dedicated exercise; any activity helped. These researchers estimated from their findings that 1 ¼ hours of physical activity per day doing things like vacuuming, mopping floors,

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[4] Stessman J, Hammerman-Rozenberg R, Cohen A, et al. Physical Activity, Function, and Longevity Among the Very Old. *Arch Intern Med (Archives of Internal Medicine)* 2009; 169:1476.
[5] Gregg E, Cauley J, Stone K, et al. Relationship of Changes in Physical Activity and Mortality Among Older Women. *JAMA* 2003: 289:2379.
[6] Manini T, Everhart J, Patel K, et al. Daily Activity Energy Expenditure and Mortality Among Older Adults. *JAMA* 2006; 296:171.

washing windows, caring for children, and walking 2.5 miles per hour would reduce mortality rates by 30 percent. And this reduction in mortality was just as apparent for people who had heart disease, vascular disease, lung disease, and diabetes, and also for people who were current or former smokers. Also these researchers showed that, as you might expect, increasing activity beyond 1 ¼ hours produced further benefits.

The medical benefits of regular exercise appear to start accruing after about 1 year. Even previously sedentary individuals who initiate exercise as late as age 85 demonstrate a significant survival benefit in three years compared to individuals who remain sedentary. [7]

Part 4: How Much Exercise is Best?

The answer to the question posed here depends entirely on how fit and agile you are. The exercise program you design should be based on health guidelines but tailored to you.

In 2008, the U.S. Department of Health and Human Services (HHS) published its Physical Activity Guidelines for Americans [8] and they are excellently written. They agree substantially with independent recommendations by the CDC, the American Heart Association (AHA), and the American College of Sports Medicine (ACSM). I will summarize the main points but I encourage you to go to www.health.gov and read the chapters that apply to you. They are concise and easy to read, and six years after publication they remain the standard. Footnote [8] below offers instructions on how to access these Guidelines.

Aerobic capacity (endurance) is built by activities like walking, jogging, dancing, swimming, and cross-country skiing, where people move their large muscles rhythmically for sustained periods. Aerobic means getting your heart rate up. The 2008 HHS Guidelines state:

> **"For substantial health benefits, adults should do at least 150 minutes (2 hours and 30 minutes) a week of moderate-intensity, or 75 minutes (1 hour and 15 minutes) a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity aerobic activity. Aerobic activity should be performed in episodes of at least 10 minutes, and preferably, it should be spread throughout the week. … A general rule of thumb is that 2 minutes of moderate-intensity activity counts the same as 1 minute of vigorous-intensity activity."**

Let's explore what this recommendation means. Physical activity for more than 10 minutes can qualify as aerobic if it's done at sufficient intensity. Light activity like self care, cooking, or casual walking does not qualify. Moderate-intensity activity will not qualify if it's done for less

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[7] Morey M. Physical Activity and Exercise in Older Adults. *UpToDate,* Wolters Kluwer Health. October 20, 2014.
[8] Department of Health and Human Services, 2008 Physical Activity Guidelines for Americans. Go to www.health.gov. In the middle of this page, there are 6 boxes arranged 3x3. The lower left box is labeled "Physical Activity Guidelines." Click on "Learn more" and you'll be taken to another page with 5 boxes in the middle. The box on the left of the second row has the heading "Guidelines." Click on that heading and you'll be taken to the index of the 2008 Guidelines. Chapter 4 on Active Adults and Chapter 5 on Active Older Adults are essential reading. You can also write to: The U.S. Department of Health and Human Services, 200 Independence Avenue, S.W., Washington, D.C. 20201. **Toll Free**: 1-877-696-6775.

than 10 minutes, so walking around the home or office or walking in from a parking lot usually isn't aerobic. However, some physically-active occupations may count as aerobic and so can active transportation choices like walking or bicycling.

So what is moderate-intensity exercise? For middle-aged adults free of functional limitations, the definition is fairly arbitrary. It's walking briskly (3 or more miles per hour [mph]) but not race-walking. It's water aerobics, general gardening, bicycling at less than 10 mph, doubles tennis, hiking, walking as you carry your golf clubs, mowing the lawn with a push mower, or jogging at less than 6 mph. The cardio equipment you find in health clubs (elliptical machines, stair-climbing machines, stationary bicycles, and treadmills) can also provide moderate-effort exercise.

Of course, vigorous exercise is more intense. It's race-walking or running at more than 6 mph. Racquetball, singles tennis, stair climbing, heavy gardening like continuous digging or hoeing, bicycling at more than 10 mph, rope jumping, calisthenics (jumping jacks, push-ups, pull-ups, sit-ups), and team sports can also be vigorous forms of exercise.

But, adults do differ in their exercise capacities and these differences are most apparent in older adults. Moderate effort is a brisk walk for some and a slow walk for others. So for adults 65 and older and for adults of any age with functional limitations, HHS suggests getting away from arbitrary definitions of effort and using effort scale that relates to an individual's aerobic capacity. Intensity can be estimated using a scale of 0 to 10, where no effort is 0 and 10 is the highest level of effort possible. On this scale, moderate-intensity activity is a 5 or 6 and vigorous-intensity activity is a 7 or 8. Be careful though because subjective perception of effort is not a precise measure of true effort. If there is uncertainty, a fitness instructor can guide you on the appropriate level of effort. In general, when people expend moderate effort, they are unable to sing and when people exercise vigorously, they are unable to utter more than a few words between breaths.

Notice that, according to HHS, aerobic exercise can be performed for short periods several times a day and integrated into the course of one's daily schedule; the focus is on total aerobic activity. By making no mention of measuring heart rate, the Guidelines keep things simple. Studies, in fact, have shown that the benefits of exercise can be readily obtained without setting or achieving goal heart rates. [9]

Notice also that the recommendations above are considered minimal – that is, the minimum most adults need to really benefit from exercise. Not all the health benefits of exercise occur at this minimum level, so the HHS Guidelines go on to say:

> **"For additional and more extensive health benefits, adults should increase their aerobic physical activity to 300 minutes (5 hours) a week of moderate-intensity, or 150 minutes a week of vigorous-intensity aerobic physical activity, or an equivalent combination of moderate- and vigorous-intensity activity."**

[9] Douglas P. Exercise and Fitness in the Prevention of Cardiovascular Disease. *UpToDate,* Wolters Kluwer Health. August 29, 2014.

Chapter 4 of the Guidelines, under "How Much Total Activity a Week?" lists the additional health benefits achievable with this doubling of aerobic activity.

The upper limit of exercise, beyond which no significant benefits accrue, is not known. Upon making its recommendation for 300 minutes of moderate exercise weekly or 150 minutes of vigorous exercise weekly, HHS goes on to add:

> **"Additional health benefits are gained by engaging in physical activity beyond this amount."**

One way to achieve the benefits of higher-intensity activity may be with interval exercise and this has become quite popular recently. An example would be interval walking such as repeated three-minute sets of high-intensity walking (basically race walking) alternating with three-minute sets of low-intensity walking. Interval training has been found to have several short-term physiologic benefits when compared to steady-tempo training, including improved cardiorespiratory fitness. However, the long-term health effects of interval training are not known and there is more potential for injury with high-intensity exercise. [3] The research is still preliminary. Varying the pace of your aerobic workouts may be beneficial but avoiding extreme variations may be wise.

Part 5: Don't Panic, Everyone Can Exercise!

If you panicked in Part 4 as you read how much aerobic activity the HHS Guidelines call for, why not begin your exercise program at an easier level and then advance in progressive increments? Use the HHS Guidelines as a goal. Chapter 6 of the Guidelines, under the subtitle "Increase Physical Activity Gradually Over Time," offers tips on deciding the pace at which to advance. But make no mistake, once you've developed (or now possess) reasonable physical capability, HHS is recommending that you do the level of aerobic activity they're calling for, regardless of whether you are middle-aged, older, or much older. Just remember, if you're not fully fit as you begin, start comfortably and wisely and keep advancing by appropriate amounts. Fitness trainers will tell you, exercising consistently, regularly, and frequently is vastly more important than how much you exert yourself on any one day or few days.

Each person really should begin by thoughtfully designing an exercise program that identifies every type of activity to be done, the level of effort at which it will be done, and the duration of that effort. Also identify how, when and where each activity will be performed and how often it will be performed per week or per month. It is particularly important that older adults make a plan like this. Design your program with disease prevention in mind. Even if you already have one or more chronic medical conditions, you need preventative exercise to reduce the risk of acquiring another condition.

Therapeutic exercises may also need to be added your program. Therapeutic exercises sometimes differ from preventative exercises because they focus on particular muscle groups or joints, which can be useful for people with certain medical conditions. People with heart disease, lung disease, osteoarthritis, low back problems, and many other conditions can be helped immensely

with properly-designed exercises. Therapeutic exercises are typically prescribed by a medical provider and sometimes they are best taught by a fitness instructor or physical therapist.

Generally speaking, a medical evaluation prior to initiating exercise is not necessary for individuals who feel well and are at low risk for coronary heart disease, but such an evaluation should be done if you have any significant chronic condition affected by exercise. See your provider if you have heart, lung, or kidney disease, or a neurological condition, or if you have 2 or more factors like elevated cholesterol, hypertension, smoking, or diabetes that put you at risk for coronary heart disease. Also see your provider if you are taking medication for hypertension, heart disease, or diabetes. And finally, get checked out before exercising if you've had a close family member who suffered a heart attack or sudden death before age 60 or who was diagnosed with coronary heart disease before age 60. [3]

There are occasions and conditions where people should temporarily avoid exercise – for example, deep vein thrombosis (deep blood clots), certain retinal diseases like retinal detachment, and of course, recent surgery.

When adults with medical conditions or disabilities choose activities suitable to their abilities, physical activity is almost always safe. Safest, of course, are moderate-intensity, low-impact activities. Injuries can and do occur but they are infrequent; most are musculoskeletal injuries from overuse or excessive straining. Heart attacks have occurred during exercise but are actually quite rare. The HHS Guidelines tell us that inactive people who gradually advance over time to moderate-intensity exercise have no known risk of sudden cardiac events and a very low risk of bone, muscle, or joint injuries. As a rule, older adults should concentrate on doing moderate-intensity exercises and leave high-intensity routines to those who have exceptional fitness, experience, and knowledge of exercise.

A related point to stress here is that people should avoid sitting continuously for long periods of time. A recent Minneapolis StarTribune issue headlined recent research by proclaiming, "…living a sedentary lifestyle is as dangerous as smoking, especially for older Americans…." Carol Garber, Ph.D. of Columbia University was reported as saying just a short duration of inactivity can affect muscles adversely. [10]

Indeed, health experts are now saying that while it's important to meet exercise recommendations, it's also important to keep moving throughout the day. Light activities aren't aerobic but they do good things for your muscles. Look for opportunities to do at least light activities in a way that breaks up periods of sitting – household chores, walking about, and even standing instead of sitting all help.

It comes down to this – some exercise is better than none. HHS stresses in its Guidelines: ***Every adult should avoid inactivity. Adults participating in any amount of physical activity gain some health benefits.*** One large study in Taiwan showed that individuals engaging in brief physical activity (15 minutes daily or 90 minutes weekly), even though the activity didn't quite reach

[10] The Good Life. *Minneapolis Star Tribune*, Wednesday, Oct 22, 2014

moderate intensity, still had a 14 percent reduction in all-cause mortality and a three-year longer life expectancy than inactive individuals. [11]

Part 6: Four Ways to Build Physical Capacity

AEROBIC EXERCISE has been our focus thus far in this series and it certainly has the most data documenting its health benefits, but there are three other important areas of physical capacity to consider as you design your exercise program.

STRENGTH TRAINING is important for everyone, and for adults with osteoarthritis, it may be of primary importance. HHS makes the following recommendation in its 2008 Physical Activity Guidelines [8] :

> **"Adults should do muscle-strengthening activities that are moderate or high intensity and involve all the major muscle groups on 2 or more days a week… . Muscle strengthening activities provide additional benefits not found with aerobic activity. … One set of 8 to 12 repetitions of each exercise is effective, although two or three sets may be more effective."**

The term "major muscle groups" means arms, shoulders, torso (chest, abdomen, back), hips, and legs. For adults 65 and older, some experts offer a slightly different recommendation: 10 to 15 repetitions per set rather than 8 to 12. [12] More repetitions, of course, necessitate the use of slightly lighter weights, which harkens back to what was said in Part 5 of this series, namely that most older adults should focus on moderate rather than vigorous activity.

Muscle strengthening for the arms and shoulders can start with home-made equipment like soup cans or empty milk jugs filled with sand, but other muscle groups will require other equipment. Don't start with weights that are uncomfortably heavy and don't assume that every weight machine in a fitness club is safe to try. A wise person will not imitate the technique of just anyone in the weight room. Most people use weight equipment incorrectly. Moreover, exercises that may be safe for the very young or the very strong may not be safe for you. Coaching for the beginner by an experienced fitness instructor or physical therapist can be invaluable, and such experts may teach you to strengthen important muscles you didn't know you had.

Train regularly, train consistently, and be patient. Setting incremental goals and noting your progress may relieve some of the boredom that comes with weight training. Remember, you are preventing and/or treating disability.

BALANCE TRAINING appears effective in reducing the risk of falling, but guidelines on balance training are not yet well-developed. The HHS Guidelines say:

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[11] Wen C, Wai J, Tsai M, et al. Minimum Amount of Physical Activity for Reduced Mortality and Extended Life Expectancy: A Prospective Cohort Study. *Lancet* 2011; 378:1244.

[12] Nelson M, Rejeski W, Blair S, et al. Physical Activity and Public Health in Older Adults, Recommendation from the American College of Sports Medicine and the American Heart Association. *Circulation* 2007: 116:1094.

> **"Older adults should do exercises that maintain or improve balance if they are at risk of falling. … Reduction in falls is seen for participants in programs that include balance and moderate-intensity muscle-strengthening activities... ."**

Chapter 5 of the HHS Guidelines describes a few simple balance exercises and supports the contention made in Part 2 of this series that muscle strengthening enhances the benefits of balance training.

A medical provider, physical therapist, or fitness instructor can design balance exercises to suit you. Properly done, these exercises will test your nervous system so Steve Rukavina, former Evolve participant and tai chi instructor, suggests focusing and relaxing: "Start with calm as you begin balance work. Quietly exhale your breath. Exhaling is easy, like the falling of a feather, and when you exhale fully, you will naturally inhale more deeply. Use a chair for support if you're unsteady. As you develop strength and stamina, move away from the chair. Gently push out of your comfort zone. Your balance program should progress and have incremental goals."

FLEXIBILITY is the fourth and final capability. Medical science has yet to prove any health benefits from flexibility exercises, but most likely this just means they haven't been looked for. Common sense would say good flexibility of the body helps minimize injury in situations like falls and car accidents, and flexibility is certainly helpful for dancing, playing with the grandkids, picking things up off the floor, and seeing who or what is behind you. Flexibility exercises involve stretching, bending, and twisting. Use good judgment at the outset and proceed incrementally. Some people can bend over and touch their toes without thinking about it while others are doing well to reach their knees; both are acceptable starting points. The HHS Guidelines say:

> **"Older adults should maintain the flexibility necessary for regular physical activity and activities of daily life. When done properly, stretching activities increase flexibility."**

Exercise experts do recommend that stretching, bending, and twisting be done for at least 10 minutes twice a week, but even better is doing this each day following aerobic or muscle-strengthening activity when the muscles are warm. [12] Muscles shorten when used and metabolic waste products like lactate build up. Stretching muscles after exercise restores them to resting length and facilitates removal of the waste products. Stretching and walking around also facilitates proper constriction of dilated peripheral arteries and gradual return of blood to the central circulation, and a fuller reduction in resting heart rate is achieved compared to ceasing exercise abruptly without cool-down.

How much time you spend cooling down after aerobic or muscle-strengthening activity depends on just how hard you exercised; 10 minutes is standard practice for many. But be careful; when you stretch, there should be no bouncing, no pulsing of the muscles, not into the stretch and not during the stretch. Go gradually and steadily, and hold each maximal stretch for 10-30 seconds before slowly letting up.

A 5 or 10-minute warm-up preceding moderate or vigorous exercise is also advisable. Go easy here because the muscles are cold. Gently shake your muscles as you move about; loosen your muscles and joints with slow, exaggerated motions; and stretch lightly, forcing nothing. Blood flow to the muscles will increase, as will heart rate and breathing rate, before the more strenuous exercises to come really bump them up.

Part 7: Setting Yourself Up for Success

One key to successful exercise is listening to your body. With awareness and experience comes the ability to recognize important signals. You'll recognize and appreciate the healthy discomfort of well-used muscles, tendons, and ligaments. You'll learn to distinguish this good feeling from the unhealthy discomfort of misuse which says back off or change what you're doing.

Few pleasures exceed the gratifying sensations that come from a strong, healthy, flexible body and being aware of these sensations will help you stay motivated. Let me share a personal story. Twenty years ago, after regularly exercising several times weekly for about 1 year, I suddenly noticed one afternoon, as I exited from the gym into cool weather, how pleasantly warm my muscles felt. My muscles distinctly felt like a warm blanket around me. I had never noticed such a feeling before and was so invigorating that I remember the moment to this day!

Listening to your body is so vitally important, and perhaps nowhere more important than when doing physical chores necessitated by Mother Nature. Think for a moment about things like snow shoveling, garden digging, gutter clearing, or house painting. In Part 6, I could have facetiously labeled such chores a fifth area of exercise, but humor is out of place here. It's deceptively easy and dangerous to let Mother Nature dictate how hard to exert yourself, so be mindful of your body. Sometimes, you can lessen Mother Nature's dictates, for example by limiting the size of your garden or by taking days and weeks to clean out your gutters, but snow shoveling tends to be different. Snowfall tempts people to shovel the entire driveway all at once, because you simply can't get the car out of the garage until you do so.

Snow shoveling is vigorous or near-vigorous activity and multiple studies have demonstrated that lifting snow, particularly wet, heavy snow, can precipitate heart attacks. The risk is not high, mind you, but it is there and the risk is significantly higher for people who are sedentary. Happily, being physically fit protects against shoveling-induced heart attacks, even in individuals with known coronary heart disease. There appear to be individuals, however, with other vascular or clotting predilections who bear higher risks of heart attack in cold temperatures even without performing strenuous exertion. [13]

A second key to successful exercise is listening to your mind and your thoughts. If you're finding it hard to stick to a regular exercise program, cognitive behavioral psychology – the science of how attitude, perceptions, and self-image impact changes in behavior – may help. I

[13] Thompson P, Franklin B, Balady G, et al. Exercise and Acute Cardiovascular Events, Placing the Risks into Perspective. A Scientific Statement from the American Heart Association Council on Nutrition, Physical Activity, and Metabolism and the Council on Clinical Cardiology. *Circulation* 2007; 115:2358.

offer here in italics some concepts from cognitive behavioral advocates. Many of the points here come from an insightful blog Christy Matta, MA wrote about dieting and losing weight. [14] Her advice could apply equally well to keeping up an exercise program.

To accomplish behavioral change, set specific, realistic goals. Overly ambitious goals can be discouraging. Surround yourself with people who will encourage your efforts. Valuable assistance can come from people in similar circumstances who have made the changes you want to make. Use a buddy system or join a group from church, health club, work, or community. Get regular feedback from your buddy(ies) on progress. [But remember Part 6 – don't use their techniques for weight lifting!] *You can use peers or lay health advisors to help tailor your program to your cultural beliefs, values, language, literacy, and customs.*

Look at the way you think about yourself. Is your self-image setting up barriers? If you start a program with the expectation that you will fail, you greatly reduce your chances for success. What do you think your ability is to make the changes you want? The best way to improve your belief in that ability is to actually have some success in reaching specific goals.

When you self monitor, you begin to notice barriers and challenges to changing your behavior. Too often we rely on negative self-judgment to motivate us and in so doing, fail to see real barriers to change. Self monitoring requires that, rather than beating yourself up for not reaching a goal, you attend to your own individual experiences.

Christy Matta goes on to say: *Some employers now offer low-priced, onsite fitness facilities for exercising. Others offer cash.* To that I would add that some health insurers offer incentives designed to encourage regular exercise, like gift cards, health-club-membership discounts, or insurance premium discounts.

Cognitive behavioral experts warn us, declining adherence to a program of change typically occurs at 4 to 6 months. I will personally attest that exercise can indeed lose its shine and feel humdrum, particularly when I haven't set a goal or when competing interests and distractions interfere. Be on guard, and if something pulls you away from exercise, don't get down on yourself. Instead, reflect on what this says about you and then take this new insight back to exercise, perhaps approaching it differently.

Part 8: Getting Started Each Day

It's well-documented that people who were sedentary during their young or middle years of life are much more likely to remain sedentary as they age. Fitting exercise into a daily routine for the first time represents major change. Conscious repetition is the key to establishing a new habit like regular exercise.

[14] Matta C. Cognitive Behavioral Strategies for Losing Weight that Work. *www.PsychCentral.com/blog/archives/2013/09/18*

Chapters 4 and 5 of the HHS Guidelines offer some examples of how you might incorporate exercise into your daily schedule. [8] Also, my new series coming in a couple weeks will provide practical tips for adding exercise to a busy schedule.

Things to consider as you start each day:

- When you choose to exercise outdoors, pick safe times of the day when lighting is good, ground conditions are acceptable, and temperatures are not extreme. For running or jumping, look for shock-absorbing surfaces like natural turf, crushed cinder, acrylic, rubber crumb, or tiles and mats that contain rubber filler.
- If you do exercise in hot temperatures, pay attention to rest, shade, and drinking enough fluids.
- Find a safe place to exercise – places that are well-lighted and maintained (no litter, no broken windows, no holes in the ground), places where other people are present. Make sure you are safely separated from motor vehicles.
- For persons having serious medical conditions or disabilities, the safest place to exercise may be a supervised setting.
- Allow some minutes for warm-up and cool-down. For those of us who aren't fit enough to make our warm-ups and cool-downs aerobic, these minutes cannot count toward the aerobic minutes in the workout. However, even though your cool-down with stretches may not count as aerobic, it may meet the flexibility portion of your program requirement (as discussed in Part 6).

Remember, you are doing something important here, so important that The American Heart Association made this sweeping statement in its most recent exercise recommendation for older adults: **"Given the breadth and strength of the evidence, physical activity should be one of the highest priorities for preventing and treating disease and disablement in older adults.**" [12]

A large study of 252,925 men and women, aged 50-71, who lived in 6 states across America in 1995, showed many of the benefits of exercise we've reviewed in this series. But one particularly striking benefit was, the people who watched more than 2 hours of television or video per day were observed to have a 50 percent reduction in mortality over 5 years if they self-reported at least 3 hours of moderate-intensity exercise per week plus at least 1 additional hour of vigorous-intensity exercise per week. [15] Now, self-reporting on questionnaires is a somewhat unreliable way of collecting data, because people tend to over-report how much they exercise. But the point remains, exercise clearly reduced mortality in TV and video watchers, so I suspect it will do the same for those of us who sit 2 or more hours a day at a computer, …

… which begs the question, have you taken your exercise pill today?

[15] Leitzmann M, Park Y, Blair A, et al. Physical Activity Recommendations and Decreased Risk of Mortality. *Arch Intern Med* 2007; 167:2453.